

HYGIENE AND PUBLIC HEALTH

UNDER THE CHARGE OF

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WASHINGTON, D.C.**The Incidence and Inheritability of Spontaneous Cancer in Mice.—**

MAUD SLYE (*Jour. Med. Research*, 1915, xxxii, 168) states that the phrase "inheritability of cancer" is used, although cancer as such is not inherited. The tendency to produce neoplasms, under the right stimulus, is as surely transmitted from generation to generation as is albinism, both in accord with Mendel law. Non-cancer-bearing strains can be had without the appearance of cancer; cancer-bearing strains can be had with the constant production of cancerous individual. Heterozygous mice may be potentially cancerous, but do not produce cancer unless two heterozygotes are mated. These results all obtained in the author's researches, and are fully demonstrated by carefully prepared charts. In-breeding as such has nothing to do with the transmission of cancer. The potentiality of the germ plasm to produce an individual whose tissues will proliferate into a neoplasm, under a given stimulus, seems to be the thing transmitted. The stimulus seems to be over-irritation at the point where the cancer arises. Cancer structures in mice are the same as those in man, they behave in the same way, and occur at points in close parallel to those in man. Tumors of the mouth and jaw are rare in mice; so, also, are chronic disorders of the oral region. Tumors of the stomach are common in man, but rare in mice. Inflammatory conditions of the stomach are rare in mice; and the intestinal disorders are acute only, followed in a few days by death of the animal. There is no case of tumor of the uterus or prostate gland, but there are no chronic disorders of these organs except hydrometria which usually does not persist. The first manifestations of the introduction of a cancer strain seem to be sarcomatous; later carcinomatous, the latter attacking the more differentiated tissues as the strain develops, and finally producing a preponderance of multiple tumors. In-breeding of cancerous strain tends to kill off the strains; out breeding tends to scatter the strain. The cancerous mice are among the largest, strongest, and most vigorously reproductive members of the strain, and only rarely does a weak mouse develop cancer. A decrease of food lowers the death age, lowers the rate of reproduction, increase deaths from ordinary infection, and does lower the cancer rate in that family. The author concludes: 1. An individual with poor normal growth has slow tumor growth. 2. An individual whose growth processes are used in reproduction shows slow tumor growth. 3. An

individual of good growth power whose normal growth processes are not being used shows rapid growth of neoplasms. Infections take the weak; cancer takes the strong mice. Reduction of food increases infectability, lowers the cancer rate. Vigorous growth increases the cancer rate, lowers infection rate. Slight infection kills a frequent female, but tumor growth is slackened by frequency. Cancers occur only in cancer strain; infections occur in any strain. Infections spread in one or to other cages; cancer does not spread in the same cage nor to other cages by contact. Mice feeding on dead infected mice may become infected, but mice do not contract cancer by feeding on dead cancerous mice. Control mice fed on cancer material do not contract cancer. Cancer is a disease of middle and advanced age when normal growth processes are confined to regeneration and reproduction; infections are diseases of early life when growth processes are largely accretions in quantity and in complexity. Cancer differs from infection, since it follows the laws of heredity, and since it can be bred into or out of strain at will. Since cancer is transmitted, rather as a tendency to occur from a given provocation, an over-irritation, the elimination of over-irritation in one of cancer ancestry should materially lower the rate, and the eugenic control of mating so that cancer shall not be potential in both should also very materially decrease the incidence of human cancer.

The Prevention of Typhus Fever.—ANDERSON (*Public Health Reports*, April 30, 1915, p. 1303) discusses the recent work on typhus fever and the methods of its prevention and control based on these researches. He states that there is no experimental evidence to support the view that typhus is acquired in any manner other than by the intermediary of lice which have previously fed on persons sick with typhus. From this fact it is possible to deduce the fundamental procedures on which the control of the disease may be based, and these procedures may be grouped under four general headings: The first is, measures for the reduction of lice infestation among the population in general. These measures are, to a large extent, educational except in institutions and places over which the sanitary authorities have supervision, such as bath-houses, lodging-houses, and similar places. In surroundings where lice may find lodgment efforts should be made for the destruction of lice and their eggs. These efforts consist in the use of insecticides, both chemical and physical, bearing in mind the important point that the louse requires frequent feedings on blood and is, therefore, most apt to be found on recently used clothing or bedding. Under the second heading should be considered measures for the eradication of all lice and their eggs found on the bodies, clothing, bedding and surroundings of cases of typhus, suspects, and contacts. The first essential under these procedures is the institution of measures requiring the prompt reporting to the sanitary authorities of all cases of suspected cases of typhus fever. These cases should be promptly seen and the inspector satisfied that the surroundings are free from lice, in which case the patient may, without danger to the community, be treated at home. If, however, such is not the case, the patient should at once be removed to the hospital and the place from which he is removed should be treated for destruction of all lice and their